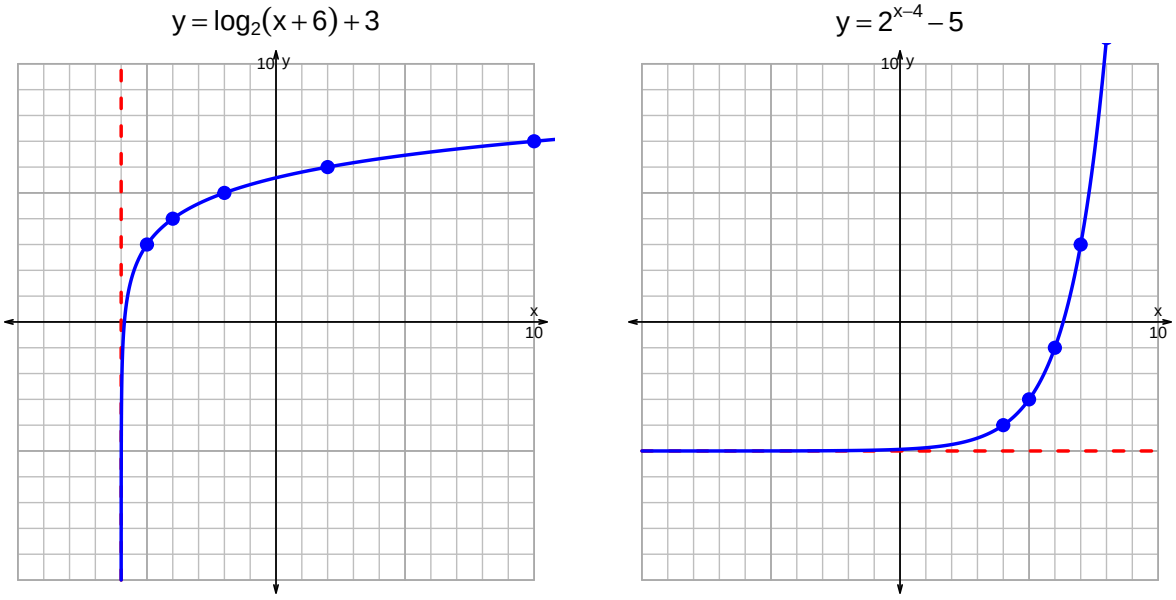
Name: Date:

S18QUIZ: EXP LOG (SLTN v253)

1. Graph $y = \log_2(x+6)+3$ and $y = 2^{x-4}-5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-4}{5}\right) \cdot 10^{7t/3}$$

Divide both sides by $\frac{-4}{5}$.

$$\frac{17 \cdot 5}{4} = 10^{7t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17 \cdot 5}{4}\right) = \frac{7t}{3}$$

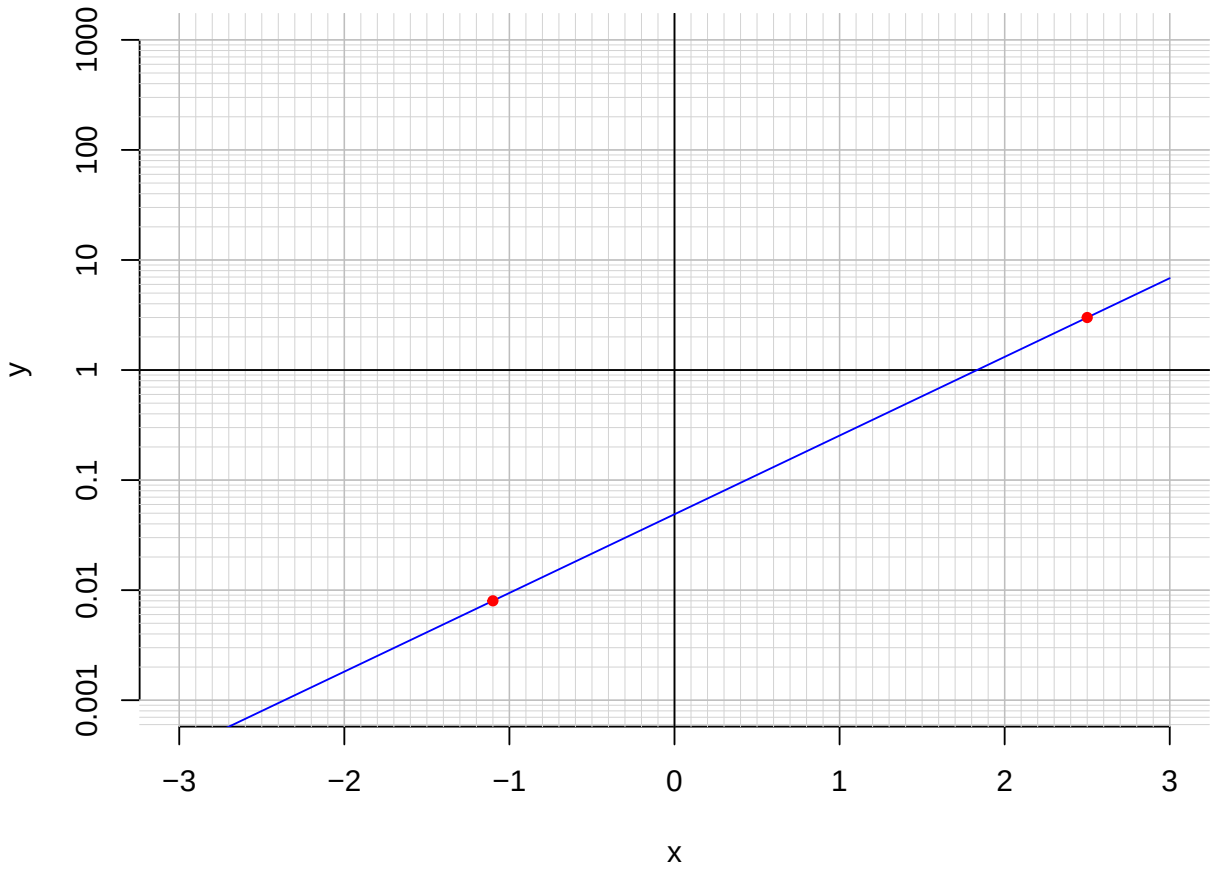
Divide both sides by $\frac{7}{3}$.

$$\frac{3}{7} \cdot \log_{10}\left(\frac{17 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_{10}\left(\frac{17 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 0.0489 \cdot e^{1.65x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.5)$.

$$f(2.5) = 3$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.65} \cdot \ln\left(\frac{x}{0.0489}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.008)$.

$$f^{-1}(0.008) = -1.1$$